Canadian Institute for International Peace and Security

24

BACKGROUND PAPER JANUARY 1989

CRUISE MISSILES AND STRATEGIC ARMS CONTROL

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INTRODUCTION

For Canadians, cruise missiles evoke a variety of images: testing the US air-launched cruise missile (ALCM) in northern Canada; the end of US adherence to SALT II limits; and new Soviet cruise missiles on a growing Soviet bomber force.

On 10 February 1983 Canada and the US signed an agreement which would allow the testing of certain US defence systems in Canada. Under this umbrella agreement, the US planned to test the air-launched cruise missile over the Canadian north. The news of possible cruise missile tests sparked protests from many Canadians. The Canadian peace movement burgeoned as the agreement to test the missile became final. Forced to respond to nation-wide resistance to the tests, Prime Minister Trudeau wrote an open letter to Canadians in which he spoke of the need to support NATO countries in their efforts to counteract the recently deployed Soviet SS-20 missiles. The testing of the cruise missile over Canada would be Canada's contribution to the NATO "two-track" policy of military strength on the one hand and arms control on the other.

The testing programme itself has generated mixed results. In 1986 one test ended in a crash-landing near the end of the flight, and, in a second test, the missile simply dropped into the sea when the engine failed to ignite.

As a weapon system the cruise missile has experienced an unprecedented rise from a little-known missile to a critical element of the nuclear forces of the superpowers and a major subject of negotiations on limiting and reducing nuclear arms. It has affected and been affected by strategic arms control negotiations undertaken by the United States and the Soviet Union.

Cruise missiles are "unmanned, self-propelled, guided, weapon delivery vehicles which sustain flight through the use of aerodynamic lift over most of their flight path." [Strategic Arms Limitation Treaty (SALT) II, Article II(8).] Cruise missiles can be launched in three different ways: from the ground (GLCM); from the air (ALCM); and from sea (SLCM). They are also categorized by the distances they can cover — some are referred to as short-range or tactical, in the range of a few hundred kilometres, and others as long-range or strategic, with ranges of a few thousand kilometres.

BACKGROUND

In the United States cruise missiles were pursued in the late 1940s and early 1950s as a possible delivery vehicle for nuclear weapons. During the 1950s it became clear that ballistic missiles could provide a more efficient delivery system for nuclear weapons. Consequently, US interest in cruise missiles began to decline, and by the early 1960s there was very little funding or activity in the US directed towards developing cruise missiles. Systems that had been deployed were slowly dismantled.

The Soviet Union has had a more consistent interest in cruise missiles. Like the US it emphasized the development of ballistic missiles as nuclear weapon delivery vehicles during the 1950s. Unlike the US, the Soviet Union continued to develop short-range cruise missiles through the 1950s and 1960s. By 1970, when the first SALT talks were underway, the Soviet Union had several hundred short-range air- and sea-launched cruise missiles. The purpose of these missiles was primarily to provide fleet support to the Soviet Navy, making up for their lack of aircraft carriers. Although the Soviet Union had a long-range cruise missile programme, no missiles were deployed.

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of an Israeli destroyer by an Egyptian SS-N-2 cruise missile (acquired from the Soviets) in 1967 led to renewed US interest in cruise missiles, and research programmes in short-range cruise missile technology were initiated. The short-range US ALCM and SLCM programmes of the early 1970s quickly spawned long-range counterparts, primarily because of a new ability to miniaturize. Smaller, more efficient engines requiring less fuel made possible a reduction in the size of the missile itself, as well as enabling it to cover longer distances. This meant that the ALCM could extend the range and flexibility of the bomber leg of the triad by providing a greater standoff capability. That is, the bomber can launch its missiles while remaining outside the radar range of the enemy's air defence network. The missiles still have sufficient range and accuracy to hit important military targets.

As a further advantage, the small size of the missile coupled with its ability to fly at low altitudes makes it very difficult to detect on radar. Consequently it is very difficult and costly to construct a defence against cruise missiles.

Both the long-range ALCM and the SLCM have become major US weapon systems. The Soviet Union has been slow to follow the US lead in this area but is certainly doing so now, with an estimated 400 ALCMs. The Soviets have also been developing long-range SLCMs while continuing deployment of short-range versions of both types of missile.

Table 1 Current Soviet and US Strategic Nuclear Forces[1]

USSR	Launchers	%	Warheads	%
ICBM	1,392	56	6,846	61
SLBM	928	38	3,232	29
ALCM Bombers	55	2	440*	4
Bombers	100	4	730	6
	2,475		11,248	
SLCM(SS-NX-21/24) estimated 3,000-km range	?			

* assumes maximum loading of 8 missiles/bomber

US	Launchers	%	Warheads	%
ICBM	1,000	51	2,310	18
SLBM	640	33	5,632	43
ALCM Bombers	144	7	1,614	12
Bombers	161	8	3,456	27
	1,945		13,012	
SLCM(Tomahawk) 2,500-km range	328			

SALT I

The first Strategic Arms Limitation Talks (SALT) began in November 1969. As noted above, the Soviet Union had a number of short-range air- and sea-launched cruise missiles at that time and the US had only a very few obsolescent air-launched missiles. Cruise missiles were a topic of discussion but did not play a major role in the negotiations.

In April 1970, the United States sought an upper limit on all SLCMs except those of a very short range. The Soviet Union argued that the missiles were tactical anti-ship weapons and should not be included in negotiations on strategic arms. Final agreement on a ban on strategic or intercontinental cruise missiles with no limits on short-range cruise missiles was within reach but was put aside when the negotiations ceased to aim for a permanent treaty and began to pursue an interim treaty.

In budget hearings during 1973, the inability of the United States to achieve limits on SLCMs at SALT I was used as a rationale for the US Department of Defense to pursue its own SLCM programme. The link to the upcoming SALT II negotiations and the development of the SLCM as a bargaining chip was explicit. One Navy official, Admiral Elmo Zumwalt, stated:

> The signing of the SALT agreements . . . left us in a situation in which the Soviet Union had a large number of cruise missiles and the United States had zero. This was a very unhealthy situation . . . and made it mandatory for the US, . . . to have something with which to negotiate.[2]

SALT II

The SALT II negotiations began in November 1972, six months after the signing of SALT I. Just as the negotiations were beginning, the US Congress was asked to approve $15.2 million in funding for the long-range cruise missile. The Senate refused on the grounds that no role had been established for the missile. A later compromise of $2.5 million gave the programme its start.

The Vladivostok Accord

Little substantive progress was achieved during the first two years of the SALT II negotiations. In November 1974 US President Gerald Ford and Soviet General Secretary Leonid Brezhnev met in Vladivostok in an attempt to give some impetus to the talks. In what became known as the Vladivostok Accord they managed to establish a framework for negotiation involving a ceiling of 2,400 on strategic launchers and heavy bombers. A sub-ceiling of 1,320 MIRVed (multiple independently targetable re-entry vehicles) missiles and a further sub-ceiling on heavy missiles were also agreed. Air-launched missiles were to be counted against the 2,400 launcher ceiling if they had a range exceeding 600 kilometres.

Although the accord was a breakthrough in the

CHRONOLOGY

November 1972 - SALT II begins.

1973 - US SLCM programme begins.

November 1974 - Vladivostok Accord: air-launched missiles with ranges over 600 km counted as strategic launchers.

June 1975 - Soviets propose a complete ban on all cruise missiles with ranges over 600 km.

January 1976 - Kissinger compromise: US and Soviets agree that bombers with ALCMs will count as MIRVed missiles; debate over number of surface ships allowed to carry SLCMs.

February 1976 - US proposes that the cruise missile issue be deferred.

March 1976 - Soviets propose long-range SLCMs be counted as strategic launchers.

January 1977 - US long-range ALCM B given priority over short-range ALCM A; US approves development of all variants of SLCM.

March 1977 - US Comprehensive Proposal: no limits on cruise missiles with ranges above 2,500 km.

May 1977 - US proposes a protocol which will ban GLCMs and SLCMs.

June 1977 - Carter cancels the B-1 strategic bomber.

September 1977 - Both sides agree that bombers with cruise missiles will be counted as MIRVed missiles.

April 1979 - agreement on number of ALCMs per bomber.

18 June 1979 - SALT II signed.

June 1982 - START negotiations begin. US proposes no limits on ALCMs or SLCMs until second phase of reductions. Soviets propose a ban on deployment of all long-range cruise missiles.

July 1983 - new US position: 400 bombers with 20 ALCMs each (8,000 ALCMs total).

1983 - Soviets propose bombers with ALCMs be counted as MIRVed missiles.

8 December 1983 - Soviets refuse to set date for resumption of talks.

March 1985 - Nuclear and Space Arms Talks begin.

September 1985 - Soviets propose ban on all long-range cruise missiles.

October 1985 - US proposes 350 bombers, 120 of which can carry ALCMs. Upper limit of 1,500 on ALCMs.

June 1986 - Soviets propose overall ceiling of 8,000 nuclear charges including ALCMs and SLCMs.

August 1986 - US proposes upper limit of 2,000 ALCMs.

October 1986 - Reykjavik: both sides agree to a ceiling of 6,000 nuclear warheads, including ALCMs; SLCM limits will be pursued outside the agreed warhead ceiling.

July 1987 - Soviet draft treaty proposes 400 long-range SLCMs be allowed on submarines.

December 1987 - Washington Summit: method for counting ALCMs per bomber still undecided. Both agree to continue to pursue SLCM limits. Gorbachev says the Soviets have developed a method of verification.

Early 1988 - Soviets propose further limits of 600 on conventional SLCMs and add one class of surface ship to permissible carriers.

negotiations it soon became the subject of further disagreement between the two sides. It quickly became clear that there were important differences over what had been agreed. The Soviets believed that the limit on air-launched missiles applied to cruise missiles as well as to ballistic missiles. The US position was that air-launched missiles referred only to ballistic missiles.

In December 1974, there was some discussion in the US about cancelling the short-range ALCM (AGM-86A or ALCM A) and developing the longer-range version of the SLCM for air launch. The missile escaped cancellation at least in part because it was thought to be advantageous to the US arms control position to have two visible programmes rather than one. Secretary of State Henry Kissinger was in favour of using the cruise missile as a bargaining chip and convinced Secretary of Defense James Schlesinger that the programme was worth pursuing for that purpose.

Six months later, in June 1975, the Soviet Union proposed a complete ban on cruise missiles with ranges of more than 600 kilometres. Had this proposal been made one or two years earlier, it might have prompted a positive response in the US. However, although the programme had just begun, the cruise missile had developed a number of staunch supporters in the US administration. Secretary of Defense Schlesinger had become a strong proponent of the missile and began making efforts to ensure that cruise missiles would not be traded away at the bargaining table. This sudden enthusiasm for the missile began to constrain Kissinger's ability to manoeuvre.

The Kissinger Compromise

In January 1976, the beginning of the election year in the US, Kissinger renewed his efforts at finding a way to overcome the cruise missile issue and went to Moscow with another set of proposals. He suggested again that cruise missiles be put outside the Vladivostok ceilings but that they be subject to further constraints. Those constraints included a range limit of 2,500 kilometres on ALCMs, 1,900 kilometres on SLCMs and 500 kilometres on GLCMs. Only 200 ships and 250 bombers could be cruise missile carriers.

The Soviets put forward some new ideas of their own. In particular they were willing to move away from a complete ban on all cruise missiles and allow ALCMs with a range of up to 2,500 kilometres, providing the ALCM-carrying bombers were counted against the ceiling of 1,320 on MIRVed missiles. In the end Kissinger accepted this proposal and the conundrum of air-launched missiles, which had perplexed the negotiators since Vladivostok, was resolved.

Upon returning to the US, Kissinger found that he was unable to win approval for the proposals. In February the US position at the negotiations reverted to the ceilings agreed to at Vladivostok and deferment of the cruise issue. The compromise achieved in Moscow was left on the table but never pursued. In March 1976, perhaps in response to US backtracking, the Soviets proposed that all long-range SLCMs be counted as strategic weapons and included under the overall ceilings established at Vladivostok.

A number of factors contributed to the US refusal to stick with the compromise. By early 1976 the US election year was moving into full swing and President Ford was less willing to advocate proposals that could be interpreted as concessions. Within the Defense Department and the administration, cruise missiles continued to garner support and the ground-launched version was now seen as a way of providing further US flexibility in Europe. It was also thought that, if the US held out long enough, the Soviets would come around with other concessions.

The Carter Administration

In January 1977, one year after the Kissinger compromise, the US Department of Defense approved continuation of the cruise missile programme. Engineering development of all aspects of the SLCM were approved and development of the GLCM was also given the go-ahead. For the first time the longer-range ALCM (AGM-86B or ALCM B) was given priority over the shorter-range version (ALCM A).

The timing here is worth noting. Although the negotiators had been discussing upper limits on numbers of long-range ALCMs as early as one year previously, it was only at this point that a formal decision was made by the US Department of Defense to actually pursue development of the long-range missile.

Fresh into office, President Carter was anxious to have an impact on the arms control negotiations and an intensive internal review of the US negotiating position was undertaken. The result was a "Comprehensive Proposal" calling for reductions based on a new framework. The proposal lowered the Vladivostok launcher ceiling from 2,400 to 1,800-2,000 and the ceiling on MIRVed missiles from 1,320 to 1,100-1,200. Cruise missiles with a range less than 2,500 kilometres were not limited at all. Secretary of State Cyrus Vance took the proposal to Moscow in March 1977.

Upset about the move away from the Vladivostok accord, which they continued to view as fundamental, the Soviets rejected both positions angrily and publicly. They were particularly angry about the US cruise missile proposal, reiterating their belief that the issue had been dealt with at Vladivostok.

Three Tiers

The US retrenched and searched for a new way out of the problem. By May 1977 a three-tier framework was developed that would become the basis for the eventual treaty. The first tier was to be the heart of the treaty, the second tier, a time-limited protocol and the third, an agreed statement of principles for negotiations at SALT III.

The duration of the protocol was to be three years, and the US suggested that it include a ban on the testing and deployment of SLCMs and GLCMs with ranges of more than 600 kilometres. Such a ban would not affect US plans for either missile since neither would be ready for deployment within the envisaged three-year time-frame.

Soviet desire to limit the ranges and deployment of SLCMs and GLCMs stemmed from their concern about possible US deployments in and around the European theatre. The potential for a long-range GLCM that could reach the Soviet Union caused them particular concern. In the end, the two sides reached agreement on a protocol which banned the deployment of SLCMs and GLCMs with ranges in excess of 600 kilometres. The US hoped that by agreeing to ban, if only temporarily, the two missiles that seemed to cause the Soviets greatest concern, they would encourage Soviet leniency on the ALCM issue. The Soviets accepted the three-year period believing that there would be tremendous political pressure on the US to continue to abide by its terms when it expired.

The protocol dealt with the issue in the near term but did not, as the Soviets had hoped, provide a precedent that carried over to the next set of negotiations. In the longer term the GLCM has been dealt with in the Intermediate-range Nuclear Forces Treaty. The SLCM was not included in the INF negotiations, although the issue may resurface in the wake of the INF Treaty if the US chooses to compensate for the elimination of GLCMs with SLCM deployments off the coast of Europe.

The B-1 Bomber

In June 1977, President Carter announced that the B-1 strategic bomber programme would be cancelled. He had been drawn to the decision by the efficiency and low cost of the ALCM, coupled with projections that the older B-52 bombers could remain airworthy into the 1990s. The move had been foreseen by some air force officials within the Pentagon during the early days of the ALCM programme. Afraid that the effectiveness and low cost of the ALCM would threaten new bomber programmes they had fought to have the cruise programme cancelled, only to have Kissinger save it from elimination for the purposes of arms control.

The B-1 decision received a great deal of criticism within the United States from a variety of fronts. Although the decision to end the programme may have been prudent, many felt that Carter had been wrong to simply cancel the programme outright rather than trading the bomber away for Soviet concessions at SALT. In fact the Soviet negotiators realized that the cancellation of the B-1 made it increasingly unlikely that the US would agree to significant limits on the weapon the Soviets had thought they had dealt with back at Vladivostok in 1974.

The decision marked the formal arrival of the ALCM as a vital part of the US deterrent force. Only six months after the formal decision to proceed with development of the long-range ALCM, the fledgling missile had earned itself a place from which its elimination or near elimination through arms control would be almost inconceivable, whatever concessions the Soviets might make.

One Bomber with Cruise Missiles equals One MIRVed Missile

In September 1977 Gromyko travelled to Washington. Coming back full circle to the compromise achieved by Kissinger in January 1976, the two sides agreed that cruise missile-carrying bombers would be counted against the MIRV ceiling of 1,320. Cruise missile-carrying bombers and other strategic bombers would have so-called *functionally-related observable differences** in order to facilitate verification.

The Soviet ALCM programme was a long way from matching progress made in the US. Their longest-range ALCM had an estimated range of 600-700 kilometres. However, by achieving agreement on counting cruise-missile bombers as MIRVed missiles, the Soviets had ensured that they could make up for their lack of ALCMs by maintaining more MIRVed ballistic missiles and would therefore not lag behind the US in overall numbers.** In addition, the agreement served to constrain US force growth because now the US had to choose between MIRVed ballistic missiles and cruise missile-carrying bombers.

Although the principal counting rules and limits on cruise missiles had been established, certain other cruise missile-related issues remained to be resolved.

Conventional ALCMs

Having agreed to limit GLCMs under the protocol, the US was anxious to reassure its Western European allies that their interests were being protected rather than traded away at the negotiations. In order to do that the US planned to deploy conventional ALCMs on non-strategic bombers in Europe. The US therefore advocated exempting conventionally armed ALCMs on non-strategic bombers from treaty limitations.

On this issue verification became the overriding factor. The Soviet Union maintained that there was no way of determining if a missile was armed with a conventional or nuclear warhead. The US was unable to develop a definitive way of verifying such a distinction. In the end, the US gave in and the request for an exemption for conventional ALCMs was withdrawn.

The SALT II Treaty was signed by President Carter and General Secretary Brezhnev in Vienna on 18 June 1979. At that time the Soviet Union had a large number (the International Institute for Strategic Studies estimates 800) of short-range ALCMs. The first tests of a new Soviet long-range ALCM were observed in late 1978. The US had approximately 400 short-range ALCMs and the long-range version was undergoing fly-off tests to determine which company would be awarded the contract to build the missile.

The treaty accepted the long-range ALCM as a new element of strategic nuclear forces prior to its deployment. The newly established counting rules reflected two concerns. First, the principle of freedom to mix ensured that the Soviet Union was not penalized for choosing to develop a relatively small (six to seven percent) bomber and ALCM force. Second, limits were established only if they were adequately verifiable by national technical means of verification.

START

New negotiations on limiting strategic nuclear arms began three years later on 29 June 1982. Prior to the official beginning of the negotiations, President Ronald Reagan outlined the initial US position. He suggested that reductions be tackled in two phases. The first phase would involve reductions to 850 launchers and 5,000 ballistic missile warheads. Bombers were to be limited in the first phase but ALCMs were not to be dealt with until the second phase.

The Soviet opening proposal called for a freeze on strategic nuclear weapons and a 20 percent reduction in the limits established under SALT. The proposal included an old SALT position and called for a ban on the

* These are external features which can be detected by satellites, and without which certain weapons systems would be indistinguishable from others.

** This is an example of the principle known as *freedom to mix*.

deployment (allowing development and testing) of all long-range cruise missiles with ranges greater than 600 kilometres. In essence, the Soviets were proposing an extension of the limits on GLCMs and SLCMs established in the SALT II Protocol and applying those limits to ALCMs.

It was not until July 1983 that an adjusted US position was presented in the form of a draft treaty. The draft repeated the US call for a ceiling of 5,000 on ballistic missile warheads with a 1,250 ceiling on launchers (up from 850). In deference to the Soviets, ALCMs were pulled back from phase II but only limited indirectly. Bombers were to be limited to 400 and were allowed no more than 20 ALCMs each.

No limits on GLCMs or SLCMs were proposed. The US felt that since GLCMs were being dealt with at the Intermediate-range Nuclear Forces negotiations they should not be addressed in START. According to Strobe Talbott there was some consideration within the Reagan administration of using the US lead in long-range SLCMs to get Soviet agreement to a complete ban. But, in a pattern similar to that of the ALCM, the missile was now seen to have real military value and therefore to be too valuable to trade away.[3]

The Soviets eased their cruise missile position slightly during 1983. They proposed that bombers with ALCMs be counted as MIRVed missiles as they had been in SALT and continued to call for a complete ban on GLCMs and SLCMs with ranges above 600 kilometres. In December 1983 the Soviets refused to set a date for the resumption of negotiations as a protest against US deployments of GLCMs and Pershing II missiles in Europe.

New Structures

The START negotiations established the Reagan administration's approach to reductions. The US proposal created a separate category for bombers and cruise missiles rather than including them in an aggregate limit of ballistic missiles and bombers with cruise missiles as had been done at SALT. The proposed result would see both sides with equal numbers of ballistic missile warheads and equal numbers of bombers, creating a situation in which the structure of both nuclear triads were proportioned in the same manner.

However, the Soviet nuclear triad has traditionally emphasized ballistic missiles, especially land-based missiles (ICBMs). These currently account for 61 percent of their total warheads (see Table 1) while the Soviet bomber force has contributed only six percent on average to the total strategic arsenal. If the Soviet Union accepted the US framework they would be in a position where they maintained equal numbers of ballistic missile warheads with the US but had only one-quarter of the 400 bombers suggested in the US proposal. If, hypothetically, the Soviets were to consider such a framework they would be faced with two options: either build up their bomber (and ALCM) force to meet the upper limit; or accept a bomber force, and total strategic force, clearly smaller than that of the United States.

The Soviet START proposal for extending the SALT framework at lower levels reflected their desire to maintain the principle of freedom to mix bombers and ballistic missiles under aggregate ceilings as established at SALT. In this case they would share an equal aggregate ceiling with the US without having to change the specific structure of their own triad. Their use of the phrase *nuclear charges* during the negotiations also signalled their desire to give a sense of equivalence to ballistic missile warheads and cruise missile warheads, as well as gravity bombs and SRAMs.

NUCLEAR AND SPACE ARMS TALKS

Negotiations began again under a new mandate in March 1985. The new talks were divided into three categories: intermediate-range missiles; strategic nuclear arms; and defence and space arms. The initial US proposal on strategic nuclear arms was virtually unchanged from the final US position at START, as was the Soviet response.

In September 1985 the Soviet Union put forward a completely new proposal calling for 50 percent cuts in strategic arms. The proposal signalled Soviet willingness to move towards deeper reductions, bringing them much closer to levels proposed by the US. On cruise missiles, the Soviets retreated to their early START and SALT position of calling for a ban on all long-range cruise missiles including ALCMs.

The US responded in October with a new proposal of its own. Among other things the US proposed a limit of 350 on heavy bombers of which 120 could carry cruise missiles. In a new twist they also proposed an upper limit of 1,500 ALCMs. The new proposal offered more substantial limits on ALCMs than the US had been willing to consider at START.

Six months later, in June 1986, another new Soviet proposal was put on the table. Compared to previous negotiations the Soviets came to an early acceptance of ALCMs and moved away from a complete ban on cruise missiles. Their proposed ceiling of 8000 nuclear charges included both ALCMs and SLCMs deployed on surface ships.

By this time the Soviets had begun deploying their own long-range ALCM. By deploying the missile on new versions of the older *Bear* bomber, the Soviets were able to deploy their ALCM four years ahead of US estimates which had assumed they would wait for the new Soviet bomber, the *Blackjack*. US Central Intelligence Agency estimates in June 1985 projected deployments of 2,000 to 3,000 Soviet cruise missiles (in all three variants) over the next ten years.

The US response in August 1986 brought the US overall numbers even closer to those of the Soviet Union

with a proposed ceiling of 7,500 on nuclear warheads. Of the 7,500 warheads, no more than 5,500 were to be carried on ballistic missiles and 2,000 (up from 1,500) on ALCMs. SLCMs were not included.

The Reykjavik Summit

This series of proposals had brought the ceilings and numbers of the two sides considerably closer together. President Reagan and General Secretary Gorbachev met to discuss the proposals at Reykjavik in October 1986. The two leaders agreed on reductions to a ceiling of 1,600 launchers and 6,000 warheads, including ALCMs, over a period of five years.

The SLCM issue was discussed again and the two sides agreed that SLCMs would be dealt with outside of the agreed warhead and launcher ceilings. The US declared itself willing to discuss SLCMs if a reliable means of verification could be found.

The attention-getting topic at Reykjavik was the discussion of the complete elimination of nuclear weapons. President Reagan maintained that he was in favour of the complete elimination of ballistic missiles only. Cruise missiles and bombers should remain and ballistic missile defences should be permitted. His position reflected his stated desire to move to a world in which the ballistic missile threat is nullified and the air-breathing missiles and carriers are enhanced. The Soviet Union, with its smaller bomber and cruise missile force, advocated the complete elimination of all nuclear weapons.

On 31 July 1987 the Soviet Union presented a new draft treaty at the negotiations which included a limit of 400 on cruise missiles launched from submarines and with ranges in excess of 600 kilometres. The Soviets maintained that limiting the deployment of SLCMs to certain classes of submarines would enhance verification. Any SLCMs found on any other kind of submarine or on a surface ship would be an automatic violation.

The Washington Summit

At the December 1987 summit Reagan and Gorbachev reiterated their desire to pursue limits on long-range SLCMs which could be verified by a combination of methods, including on-site inspection. The number of ALCMs to be attributed to each bomber was discussed but, as with SALT II, this question continued to be one of the final sticking points. Methods for distinguishing conventional from nuclear ALCMs also remained to be negotiated.

The summit communiqué stated that a ceiling of 4,900 on ballistic missile warheads had been agreed. Since the overall limit remained 6,000 warheads this means that both sides could choose to deploy at least 1,100 on ALCMs. Soviet acceptance of a separation of the limits on ballistic missile warheads from ALCMs marked a distinct change from previous Soviet positions and was a formal signal of Soviet willingness to restructure their triad and build up their bomber force.

During the first round of negotiations in 1988 the Soviet Union proposed a limit of 600 on conventionally armed SLCMs and added that one type of surface ship could be allowed to carry nuclear SLCMs in addition to the two classes of submarines previously proposed.

Verification

In the absence of significant limits, SLCMs represent a serious opportunity for the expansion of strategic nuclear arsenals above and beyond the numbers under consideration at Geneva. Both sides are proceeding with long- and short-range SLCMs.

In the early stages of development of the cruise missile there was considerable concern that the small size of the missile would make it very difficult to verify in an arms control agreement. In fact, there was less cause for concern than initially thought. Arms control agreements have to date dealt successfully with ALCMs and GLCMs. However, the problems of verifying limits on SLCMs are enormous. There are no obvious differences between nuclear and conventional SLCMs, or between short-range and long-range SLCMs. Other cruise missiles, ALCMs or GLCMs, could be converted relatively easily into SLCMs (an option considered by the US for the GLCMs during the INF negotiations). It is also difficult to count SLCMs. There is no direct correspondence between the launching facilities of a ship or submarine and the number of SLCMs it might have on it.

Some counting rules might yet be developed and the Soviet Union continues to propose possible verification methods. These proposals include inspections and the use of a device to determine whether a ship is carrying nuclear weapons. Whatever the counting rules, highly intrusive verification will be necessary and may prove difficult to negotiate.

CONCLUSION

Long-range cruise missiles were initially developed by the US as a bargaining chip for SALT II. Although the Soviet Union stated its willingness to limit cruise missiles, by the time the dispute over the Vladivostok accord had settled down, the ALCM was seen by the US military as too valuable to bargain away. The roles then became reversed and it became the aim of US negotiators to protect the cruise missile.

The SLCM was initially more militarily successful as a short-range missile and the long-range version has been developed more slowly by both sides. Long-range SLCMs now have the potential to become the fourth leg of strategic nuclear forces. Soviet pressure on this issue indicates that they are eager to limit SLCM deployments. Serious limitations may therefore be possible. However,

verification of such limits is highly problematic and continues to be a principle obstacle to movement in this area.

Soviet acceptance of separate limits on ballistic missile warheads and cruise missiles is evidence that the Soviet Union has made a decision to place new emphasis on the cruise-missile bomber element of their triad. Further evidence is found in the appearance of the Soviet ALCM on *Bear H* bombers in 1985, four years ahead of US estimates. This marks a significant change in the structure of the Soviet nuclear triad.

Three scenarios present themselves for the future. First, it is possible that an agreement on reducing strategic nuclear arms may not be concluded. In this case the Soviet ALCM and SLCM force will continue to increase but the effect of the increase will be lessened by the maintenance of large ballistic missile forces on both sides.

Second, there could be an agreement to reduce strategic nuclear arms to the lower levels already agreed upon without an agreement on SLCMs. The effect of the lower ceilings — 6,000 warheads, 4,900 on ballistic missile warheads — makes it likely that the Soviet bomber leg of the triad will grow, simply as a result of the structure of the limits, from six percent to eighteen percent of the triad, possibly higher. Since there would be no limits on SLCMs, the total air-breathing threat would be considerably higher again.

Finally, agreement to reduce strategic arms could be accompanied by limits on SLCMs. In this case the air-breathing threat would still increase because of the new structure but would be constrained by upper limits.

The third scenario appears the most desirable. But, it would still mean an increase in the raw numbers of Soviet cruise missiles facing Canada and the US. This change in the nature and size of the air-breathing threat may become even more significant if US pursuit of SDI leads to a situation where there is a limited form of ballistic missile defence. Canadian concerns about the cruise missile are likely to increase rather than be abated by these trends.

The preceding study suggests some interesting conclusions about the connections between military development and arms control policies in the US. The modern US cruise missile programme was initiated primarily out of military interest stemming from the successful use of a Soviet-made cruise missile in the Middle East. There were, however, at least two critical points in the missile's early development at which a decision was made to continue with the programme in order to augment US arms control positions. Within months the situation had changed and the cruise missile was being heralded by the military as too valuable to deal away at the negotiating table. Cruise missiles have become an important element of the US strategic nuclear triad. The Soviets, unable to achieve a ban on the missile at the negotiations, now have their own cruise missile force. Consequently, Canada and the US are faced with a stronger and larger Soviet air-breathing threat.

NOTES

1. Figures from: International Institute for Strategic Studies, *The Military Balance 1987/88*, London, 1987; and "US and Soviet Strategic Nuclear Forces, End of 1987," *Bulletin of Atomic Scientists*, January/February 1988, p. 56.
2. *Fiscal Year 1974 Authorization for Military Procurement*, Hearings, US Congress, Government Printing Office, Washington, DC, 1973, p. 1000.
3. Strobe Talbott, *Deadly Gambits*, Vintage Books, New York, 1985, p. 242.

FURTHER READING

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Published by the Canadian Institute for International Peace and Security. Additional copies are available from the Institute: Constitution Square, 360 Albert Street, Suite 900, Ottawa, Ontario, K1R 7X7.

Le présent exposé est également publié en français.

ISBN: 0-662-16684-1